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ABSTRACT

Two conferences were held to: (1) study the decline in mathematics and science academic performance among elementary and secondary students; (2) examine the dramatic lack of participation of women, Blacks, Hispanics, American Indians, and others historically underrepresented in these academic areas; and (3) propose strategies to improve these situations and to influence local, state, and national policymakers. The conferences acquainted participants with findings of the recently released White House Report, "Science and Engineering Education for the 1980s and Beyond" and provided opportunities for them to discuss implications of the report and to generate proposed strategies for alerting others to its contents and for influencing public policies. In addition, participants heard presentations by representatives of industry, education, science, mathematics, and engineering. Included in this report are participant recommendations, categorized according to the conference(s) at which they were generated and by their respective level(s) of impact. Recommendations focus on awareness and involvement, programs, and on resources and support. Also included are recommendations of conference presenters and of Southwest Educational Development Laboratory (SEDL) staff. One SEDL recommendation is fostering the idea that science is as much a "basic" as reading, writing, and human interaction. (JN)

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FINAL REPORT

THE SEDL REGIONAL CONFERENCES: THE WHITE HOUSE REPORT ON SCIENCE & ENGINEERING EDUCATION

March 10, 1981
March 12, 1981

ORDER NO. NIE-P-81-0019

SUBMITTED BY:

SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY
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Dr. James H. Perry
Executive Director

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MAY, 1981

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INTRODUCTION

The Southwest Educational Development Laboratory (SEDL) was one of four institutions in the United States funded to sponsor regional planning conferences for influential educators and other officials to: (1) study the decline in mathematics and science academic performance among elementary and secondary students; (2) examine the dramatic lack of participation of women, Blacks, Hispanics, American Indians, and others historically underrepresented in these academic areas; and (3) propose strategies to improve these situations and to influence local, state, and national policy makers. SEDL elected to sponsor two conferences: one was held on March 10, 1981, in Austin, Texas, for participants representing New Mexico, Oklahoma and Texas; and the other was held on March 12, 1981, in Baton Rouge, Louisiana for participants representing Arkansas, Louisiana, and Mississippi. Each conference was titled "The SEDL Regional Conference: The White House Report on Science and Engineering."

The conferences acquainted educators and representatives of industry, mathematics, science, and engineering with the findings of the recently released White House Report, SCIENCE AND ENGINEERING EDUCATION FOR THE 198Cs AND BEYOND, jointly prepared by the National Science Foundation and the U.S. Department of Education. The opportunity was provided for participants to meet with each other to discuss the implications of the report and to generate proposed strategies for alerting others to its contents and for influencing public policy.

Both conferences followed a basic outline: for the morning session, the White House Report was presented first, followed by presentations by representatives of industry, education, and science/mathematics/engineering. For the afternoon session, participants divided into two groups to discuss the Report and make recommendations.

In order to reach a wide range of participants who could in turn reach large numbers of colleagues, the SEDL staff invited participants from statewide associations of: local school boards; teachers; administrators; counselors; subject specialists in mathematics and science; librarians; the Chief State School Officers; state boards of education; state education agency subject specialists in mathematics, science, and vocational/technical education; subject specialists from the 20 intermediate education agencies in Texas; state facilitators with the National Diffusion Network; deans' associations; parent-teacher groups; textbook companies; testing companies; professional engineers, mathematicians, and scientists; legislators; representatives from Governors' offices; parochial districts; chambers of commerce; manufacturing associations; and service groups. In

addition, local district superintendents (public and private) and the deans of education, mathematics, science, and engineering from the local school districts, colleges, and universities located in the conference-site city were invited.

In selecting the presenters, SEDL staff developed the following criteria: that the person chosen to present the White House Report have had an integral part in its production; that the six subject-specific presenters come from each of the three states represented at each conference; that they represent the three broad areas of education, industry, or science/mathematics/engineering; and that at least one of the presenters at each conference speak to the lack of women and minorities in science, mathematics and engineering.

After conversations with members of the staff of the Office of Educational Research and Improvement (OERI), SEDL staff, state education agency staff in the six states, heads of professional associations, and persons listed in the White House Report as having taken part in the creation of the document, SEDL invited four persons to participate as presenters for each conference.

Presenters for the Austin, Texas conference included Mr. Jerry Elliott, Project Engineer, Technical Manager, Space Shuttle Program Office, NASA Johnson Space Center, Houston, Texas; Dr. Mary Atwater, Associate Director, Southwest Resource Center for Science and Engineering and Assistant Professor, Department of Curriculum and Instruction, New Mexico State University, Las Cruces, New Mexico; and Dr. Carole Hardeman, Project Director, Southwest Center for Human Relations Studies, University of Oklahoma, Norman, Oklahoma.

Presenters for the Baton Rouge, Louisiana, conference included Robert A. Rand, Chief Industrial Engineer, Arkansas Operations, Aluminum Company of America (ALOCA), Bauxite, Arkansas; Dr. James Perkins, Chair, Division of Natural Science and Head of the Chemistry Department at Jackson State University, Jackson, Mississippi; and Dr. Helen Brown, Director, Bureau of Curriculum, Inservice, and Staff Development, Louisiana State Department of Education, Baton Rouge, Louisiana.

Dr. John Mays, Science Advisor, National Institute of Education, United States Department of Education, was scheduled to present the White House Report at both conferences, but was unable to attend because of last-minute budget problems. Dr. Preston C. Kronkosky, Deputy Executive Director, Southwest Educational Development Laboratory, presented the White House Report for Dr. Mays.

In order to generate recommendations from participants, SEDL staff planned to divide participants into two groups: Group A would propose alternatives for OERI to alert national, regional, state, and local officials of the need to address the decline in science and mathematics academic performance and the need for training teachers in these fields. Group B would propose plans to guide national, regional, state, and local officials in their efforts to improve academic performance in these areas. Presenters were asked to participate in both groups. In reality, participants wished to discuss both issues. The SEDL staff decided, therefore, to discuss both issues with each small group.

As a result of these conferences, SEDL staff wrote an article about the Austin conference, which appeared in a publication of the Texas Association of School Boards. In addition, Dr. Preston C. Kronkosky made a presentation about the White House Report to the annual spring meeting of the Texas Chapter of the Mathematical Association of America, in San Antonio, April 11, 1981. He has accepted an invitation to make a similar presentation to the annual convention of the American Mathematical Association of Two Year Colleges at New Orleans, Louisiana, in October, 1981. Dr. Kronkosky and Dr. James H. Perry, SEDL Executive Director, are scheduled to meet with Mr. Jerry Elliott, to discuss ways SEDL and NASA may cooperate. Finally, SEDL staff have provided information from the report to a staff member of the Texas Education Agency planning a presentation on women and minorities in mathematics and science education for a group of school administrators.

Participant recommendations are provided in the charts which follow. Recommendations are categorized according to the conference(s) at which they were generated, and by their respective levels of impact. Following the charts are recommendations made by the three presenters at each conference. Next, the participants' evaluations are included. Finally, the SEDL staff offer their recommendations.

PARTICIPANT RECOMMENDATIONS

FROM

THE SEDL REGIONAL CONFERENCE:
THE WHITE HOUSE REPORT ON SCIENCE &
ENGINEERING EDUCATION

Austin, Texas
March 10, 1981

Baton Rouge, Lousiana
March 12, 1981

SEDL REGIONAL CONFERENCE
Participant Recommendations

RECOMMENDATION	SOURCE		LEVEL OF IMPACT			
	Austin	Baton Rouge	National	Regional	State	Local
Awareness/Involvement						
. Encourage individuals to express their educational concerns to their local school boards and school staffs, thus providing for local responsibility as well as local control.	X	X				X
. Involve the media in focusing attention on problems/issues related to mathematics and science education.	X	X	X		X	X
. Write congressional officials, to focus attention on problems/issues related to mathematics and science education.	X	X	X		X	
. Inform the government of opposition to policies harmful to mathematics/science education.		X	X		X	
. Maintain long-term personal commitments to improving mathematics/science education.	X	X				X
. Increase student awareness of the usefulness of science and mathematics.	X					X
. Effectively involve professional organizations which can contribute resources or relevant information.	X	X	X	X	X	X

SEDL REGIONAL CONFERENCE
Participant Recommendations

RECOMMENDATION	SOURCE		LEVEL OF IMPACT			
	Austin	Baton Rouge	National	Regional	State	Local
Awareness/Involvement cont.						
. Make presentations at national, regional, state, and local meetings of professional organizations.	X	X	X	X	X	X
. Encourage professionals in the fields of mathematics and science to work within their own institutions and professional organizations to develop a philosophy/stance regarding their commitment to improving mathematics/science education.	X				X	X
. Increase awareness among parents and the general public of the current problems in mathematics/science education.	X	X	X	X	X	X
. Engage parent and/or community groups in planning, supporting, and presenting mathematics/science programs and activities.	X	X				X
Programs						
. Utilize a variety of teaching approaches, including interdisciplinary approaches and circuit-teaching.		X				X

SEDL REGIONAL CONFERENCE
Participant Recommendations

RECOMMENDATION	SOURCE		LEVEL OF IMPACT			
	Austin	Baton Rouge	National	Regional	State	Local
Programs cont.						
. Provide pre-college training for science- and technology-related jobs.		X			X	X
. Improve teaching and counseling at the middle school level.		X				X
. Update and improve mathematics/science curricula, focusing on incremental learning, basic math/science skills, technological developments, and problem-solving communications skills.	X	X			X	X
. Use career education to encourage entry into mathematics, science, and engineering, especially by women and minorities.		X				X
. Set up a science resource center system to provide materials and technical assistance to teachers.		X	X	X	X	X
. Set up resource centers or other programs through which parents, educators, and representatives from business and industry can meet to improve the educational system.		X			X	X

SEDL REGIONAL CONFERENCE
Participant Recommendations

RECOMMENDATION	SOURCE		LEVEL OF IMPACT			
	Austin	Baton Rouge	National	Regional	State	Local
Programs cont.						
. Offer workshops in which business, industry, and government provide teachers with ideas and information on specific topics.		X	X	X	X	X
. Require more mathematics and science courses for high school graduation and college admission.		X			X	
. Encourage continuing education for parents.		X			X	X
. Include a science counselor within every local school district.	X				X	X
. Include student perspectives/interests in planning school programs and activities.	X				X	X
. Increase the relevance of mathematics/ science education to the world of work.	X				X	X
. Be sure that publishers and textbook adoption committees know the sequence of skills to be included in mathematics and science textbooks.	X	X	X		X	X
. Develop educational television programs, such as the PBS science program, 1-2-3 Contact.	X	X	X			

SEDL REGIONAL CONFERENCE
Participant Recommendations

RECOMMENDATION	SOURCE		LEVEL OF IMPACT			
	Austin	Baton Rouge	National	Regional	State	Local
Programs cont.						
. Improve effectiveness of dissemination of R&D outcomes re mathematics/science teaching and effective school programs.	X		X	X	X	X
. Disseminate materials from business and industry appropriate for use in public schools.	X		X	X	X	X
. Encourage business/industry adopt-a-school, adopt-a-student programs.	X		X	X	X	X
Resources/Support						
. Increase financial support for public school teachers and for college and university faculties.	X	X			X	X
. Lift ceiling on government salaries for scientists and engineers.	X		X			
. Increase support for technical education training and the institutions which provide such training.	X	X			X	X
. Support improvement in mathematics and science education programs at community colleges.	X	X				X

SEDL REGIONAL CONFERENCE
Participant Recommendations

RECOMMENDATION	SOURCE		LEVEL OF IMPACT			
	Austin	Baton Rouge	National	Regional	State	Local
Resources/Support cont.						
. Support institutions, programs, and staffing patterns which provide students with role models of their own race/ethnicity or sex, particularly in the fields of engineering, mathematics, and science.	X	X			X	X
. Establish a national commitment, with funds to support it, for improvement of mathematics/ science education.	X	X	X			
. Set priorities for implementing programs which will maximize the impact of limited resources.		X	X	X	X	X
. Offer incentives to business/industry to portray positive role models for women and minorities.		X	X		X	X
. Provide financial support at all levels for improving mathematics and science education.		X	X	X	X	X
. Provide scholarships and other financial support to students who take specified mathematics/science courses.		X	X	X	X	X
. Provide tuition tax credits for parents to send children to special mathematics/ science schools.		X			X	

SEDL REGIONAL CONFERENCE
Participant Recommendations

RECOMMENDATION	SOURCE		LEVEL OF IMPACT			
	Austin	Baton Rouge	National	Regional	State	Local
Resources/Support cont.						
. Ensure qualified faculty in public schools, colleges, and universities.	X	X			X	X
. Establish summer training programs for teachers (with pay).	X	X	X		X	
. Encourage business and industry to provide summer jobs for mathematics and science teachers.	X		X	X	X	X
. Provide retraining for good teachers who are not certified in mathematics or science.	X	X			X	X
. Develop innovative strategies/procedures for teacher certification.	X	X			X	
Other						
. Examine other factors in contemporary life (e.g., air pollution) which may adversely affect the higher cognitive functions.		X	X		X	X
. Reaffirm to the federal government that priorities for educational equity and equal access for women and ethnic minorities must be supported with more than rhetoric.		X	X			

PRESENTER RECOMMENDATIONS

FROM

THE SEDL REGIONAL CONFERENCE:
THE WHITE HOUSE REPORT ON SCIENCE &
ENGINEERING EDUCATION

Austin, Texas
March 10, 1981

Baton Rouge, Louisiana
March 12, 1981

JERRY ELLIOTT, Project Engineer
NASA's Johnson Space Center
Houston, Texas

PRESENTER, INDUSTRY PERSPECTIVE, AUSTIN CONFERENCE

RECOMMENDATIONS

1. Provide appropriate counseling in the schools.

   Most counselors are uninformed in technical fields and most are education or social science graduates. Each school or school system must select and train at least one counselor in the hard sciences so more students have an opportunity to learn about entering these fields. The counselors would continue to be supportive throughout the secondary experience.

2. Provide "on-the-job" career orientations.

   Students, particularly those in isolated schools, have little awareness or knowledge of opportunities in technical and science fields. Joint programs must be developed with business and industry, including on-site visitations and seminars, so that students may gain an understanding of, and motivation toward, scientific education.

3. Develop "bridge" programs.

   Problems most frequently faced by minority students are those associated with money, motivation, preparation and transition. "Bridge" programs could compensate for weak primary and secondary school preparation.

4. Recruit students for entry into college.

   Recruiting programs must be developed and/or expanded with recruiters visiting schools to identify capable students. The recruiters would encourage and assist the students in preparing themselves for entry into the college of their choice.

5. Provide counselors for students at colleges.

   Where significant minority enrollments exist, the need for counselors has been demonstrated in the areas of motivation, career planning, financial assistance, and cultural adjustments. It is critical in many instances that the counselor be a minority with appropriate training and experience.

6. Provide special tutorial assistance.

   Students from some schools are unprepared to budget their time, their study schedules, and to establish personal performance standards which lead to success in the academic world. Special tutorial assistance by an upperclass student in personal study habits is a vital ingredient to achievement.

7. Offer summer jobs in business, government, and industry.

   There are many summer programs designed for students in the technical fields. The challenge is for counselors to locate these programs and seek the inclusion of their students, as well as to create new programs with companies doing business in or near their schools or districts.

8. Increase scholarships.

   This is recognized as a continuing problem and the inadequacy and uncertainty of grants and scholarships present great difficulties to students and institutions. Increasing the technical populace demands increased funding.

9. Communicate success stories.

   A most important motivating force to the young student is to know of the success and accomplishments of those who have gone before.

10. Conduct symposia.

    A series of statewide and regional symposia should be developed by educational groups with technical assistance provided by government (state and federal) in organizing and managing these symposia.

    The planning team should include university and college administrators, state department of education personnel and representatives from local school districts.

11. Disseminate information.

    Reiterate the need for widespread dissemination of information about publications, grants, and other specific educational opportunities.

MARY ANN MONROE ATWATER, Associate Director
Southwest Resource Center for Science and
Engineering and Assistant Professor
Department of Curriculum & Instruction
New Mexico State University
Las Cruces, New Mexico

PRESENTER, SCIENCE/MATHEMATICS/ENGINEERING PRESPECTIVE, AUSTIN CONFERENCE

RESPONSE TO WHITE HOUSE REPORT & RECOMMENDATIONS

Existing statistics adequately support the conclusions arrived at by the White House Report that the proportion of ethnic minorities and women who major in science and engineering is small relative to their populations.

What are the reasons for these statistics? First, let me propose that one reason is not minority perceptions of the importance of a college education. In the "The Tenth Annual Gallup Poll of the Public Attitudes Toward the Public Schools," reported in the Phi Delta Kappan of September 1978, respondents were asked: "How important is a college education today?--Very important, Fairly Important, or Not Too Important." Although racial groupings were very broadly divided into "white" and "other," there is very little difference in the responses between the two groups: 35% of the whites and 46% of the others indicated that a college education is "very important"; 47% of the whites and 32% of the others answered "fairly important."

If this is so, then why are few ethnic minorities entering and completing degrees in science and engineering? One of the reasons is lack of knowledge about these fields. With integration and more opportunities, few Black or Hispanic or American Indian students have science or mathematics teachers who are minorities. Thus they lack role models.

Let's assume we do get these students to attend a college and pursue a bachelor's degree in science or engineering. Many professors believe that since minority students have been given the opportunity to attend college they need no other support except that which is given to Anglo students. This is not the case.

In research I conducted on Black students in a predominately white university, I found that the "whiteness" of the environment, the size of the classes, the small number of Black students, and the attitude of unacceptance of Black students and Black culture cause high rates of attrition and transfer among Black students.

These students, and other minority students, need additional support to help them succeed. Many science and engineering colleges are composed of faculties with a mean age of 40. Many of the faculty members are oriented toward research and are unable to serve as good advisors to minority students. The professors lack the necessary interpersonal skills and concerns.

When these minority students do graduate, few consider graduate school. Many come from economically disadvantaged backgrounds; therefore, $20,000 or more sounds like a lot of money. Few ask "What do I wish to be doing five or ten years from graduation," or "What kind of skills and knowledge are necessary to fulfill this goal?"

Traditionally it has been Anglo males who have entered the fields of math, science and engineering. Today, however, the number of such males entering these fields has levelled off. Enrollments in colleges and universities are declining, and shortages are predicted in all levels of computer science and some areas of engineering. If these shortages come to pass and the declining enrollment of white males continues, the shortages can only be eradicated by increasing the number of ethnic minorities and women who are prepared to enter the fields of mathematics, science and engineering. This country needs the talents of minorities and women and cannot afford to ignore such an important segment of its population.

CAROLE HARDEMAN, Project Director
Southwest Center for
Human Relations Studies
University of Oklahoma
Norman, Oklahoma

PRESENTER, EDUCATION PERSPECTIVE, AUSTIN CONFERENCE

RECOMMENDATIONS

General

1. We as a nation--educators, leaders in industry, scientists, parents, etc.--must enhance the awareness of what science technology is, and the meaningful ways in which it affects our lives. Until science becomes a priority, no school (secondary or post secondary) is going to recruit students into this field of study where insufficient resources pragmatically require an annual quantitative and qualitative reduction of course offerings.

2. We must stop reacting to crises and begin initiating concretely to meet the anticipated needs of our society. We, who once led the world in science technology, do not require our high school graduates to take any advanced course work in this area.

3. We must encourage, actively recruit, and make use of all of our resources, which includes women, minorities and the physically handicapped. We must begin perceiving little Black boys, little Native American girls, young Hispanics and handicapped kids as potential scientists.

4. We must refuse to purchase textbooks for our school system which ignore the achievements of any segment of our society. All children need positive role models of their own sex, race and culture.

5. The entire structure of inservice training needs to be changed. Educators should borrow training techniques from private industry. Quite often teachers participating in inservice training are passive, bored and feel non-productive. Too often inservice training is the result of haphazard and last minute planning, yet it is through effective staff development and inservice that teachers can become more effective educators.

6. Teachers should be encouraged to seek community resources, such as industry, volunteers, etc.

7. Videotapes should be made of successful teachers at work so that student teachers and beginning teachers can learn from them.

8. Student teachers should be treated like professional interns, much like medical interns. The schools have not followed the pattern of most other institutions in this country. We have not made any remarkable changes in the past thirty years, but just plod along, occasionally reacting to a crisis.

Secondary Education

1. We should communicate the fact to students that mathematics is a useful, needed tool, that when understood and properly utilized, can make our lives more interesting, enjoyable, and exciting. For example, math assignments can include developing timelines, navigating automobile trips, determining mileage when the gas gauge breaks, etc.

2. We should change the way science is taught in many classrooms, where there is no laboratory work or discovery experience, no emphasis on scientists who are still living, no emphasis on day-to-day happenings in the scientific community, a total disregard for significant scientific achievements and discoveries of women and minorities, and where the typical activity is to read, listen to a lecture and regurgitate on written tests.

3. We must set priorities that include math and science education. Schools have always, and do now, respond to the demands of the public sector. As long as the parents and students do not see the correlation between higher level science and mathematics courses and careers as engineers, computer professionals, etc., and do not let the school boards and top level school administrators know that science/math education is a "number one" priority, then we will not see any changes and we will continue to emphasize sports over math and science courses.

4. Teachers must learn to recognize and enhance those traits, behaviors, and characteristics of students with science career potential. Curiosity, the ability to concentrate for long periods of time, the ability to enjoy working independently with ideas and solving problems, and the ability to present findings in written reports have been identified as crucial characteristics. Students with science and engineering career potential need good reasoning ability, persistence, the ability to apply basic principles to new types of problems, and the ability to communicate well with others, since they must often work with non-mathematicians on problem descriptions. These traits are not confined to any one race, culture, economic level or sex.

Robert A. Rand, Chief Industrial Engineer
Arkansas Operations
Aluminum Company of America (ALCOA)
Bauxite, Arkansas

PRESENTER, INDUSTRY PERSPECTIVE, BATON ROUGE CONFERENCE

RECOMMENDATIONS

1. Industry can hire college and university faculty as consultants.

   University salaries are not competitive with industry, but people attracted to academia often don't demand top salaries. One way industry can help is to use university faculty as consultants on specific problems. That gives industry access to outside talent, gives faculty exposure to industry needs to take back to classrooms, and gives faculty additional income. The fee received could go into a general fund for all the faculty members in a particular department. This approach also allows industry to have access to additional assistance without hiring a full-time engineer.

2. Industry can donate usable equipment.

   Secondary schools as well as colleges and universities are having problems maintaining and replacing obsolete facilities. Taxpayer, alumni and industry support are important in addressing this problem. Industry can donate usable equipment. (It does not seem feasible in a number of instances, however, for educational institutions to use industry equipment or facilities on site.) Grants from corporate foundations may also be an approach to addressing this need.

3. Math & science curricula need to be revised periodically.

   Since industry is constantly changing, there is a need for a periodic review and up-dating of curricula. Options offered should satisfy interests of students and needs of various industries. A committee representing students, faculty and industry can meet to suggest such revisions.

4. Schools should require achievement tests for promotion.

   One way to improve educational standards is for schools to require achievement tests for promotion in each grade. Minimum performance standards should be set.

5. Voc-tech programs and continuing ed can be established for students who are not academically inclined.

   As labor becomes increasingly expensive, it makes sense to automate. We will need skilled people to operate and maintain equipment. Voc-tech and continuing education programs can provide industry with skilled workers and candidates for supervisory positions. Tuition aid can be offered by industry to encourage employees to take continuing education programs and thus increase their on-the-job skills.

6. Industry should make its needs known and provide support.

   Industry should make its needs known to education and provide financial and other forms of assistance. It should share experiences with faculty and students through guest lectures, technical society presentations and loaned professorships.

7. Government should be involved at state and federal levels.

   Government bodies could provide major facilities and equipment as well as research grants for worthwhile projects such as energy development.

JAMES PERKINS, Chair
Division of Natural Sciences and
Head of the Chemistry Department
Jackson State University
Jackson, Mississippi

PRESENTER, SCIENCE/MATHEMATICS/ENGINEERING PERSPECTIVE, BATON ROUGE CONFERENCE

The White House Report, as written, fails to do justice to the problems of minorities and women. The contributions that science and technology have made to society have not been shared by all its citizens. Minorities and women live and enjoy some of the benefits of this society, but because of their under-representation in the technical fields they have not benefitted in an equitable and productive manner.

There are a number of institutions in this country which have traditionally produced the lion's share of scientists and engineers. These individuals, Anglo males, were groomed for positions of policy in government, leaders in private industry, and are basically in control of directions in science and engineering.

The problems facing minorities as a whole are more acute in the face of the technological environment in which we live. The whole issue of scientific literacy is compounded by the lack of participation of a significant number of minorities who could serve as role models and valid disseminators of information.

Majority institutions have a poor success rate in preparing blacks for advanced degrees in science and engineering. Black colleges and universities know how to prepare blacks for careers in science and engineering. Major financial commitment to equip such institutions to do even a better job than they have in the past is needed.

RECOMMENDATIONS

1. Interfacing of universities, colleges, secondary and elementary schools should be encouraged.

    - Such an arrangement should have the characteristics of continuity of support through the various levels vis-a-vis different programmatic components.

2. Minority institutions which have by their very nature addressed the unique problems associated at various levels--with the education of

minorities--should be given strong and sustained support by the federal government.

- Historically black universities represent a national resource, who have had an impressive track record in spite of numerous barriers, which should be nurtured and supported.

3. Programs which address various aspects of continuing education should be developed and maintained to impact on the general levels of scientific literacy.

   - Summer institutes centered at minority universities should be offered on an annual basis and should involve an appropriate mix of elementary, secondary, and university professionals working in science and science education.

   - Academic year science workshops could utilize teachers, who have participated in the summer institutes, and involve parents and students in monthly learning experiences, perhaps discussing timely topics, e.g., energy, conservation, etc.

4. The tremendous potentials offered by private industry in the areas of supplemental reinforcement programs in conjunction with educational institutions should be exploited to the fullest extent and participating companies given proper incentives, e.g., tax credits.

5. Collaborative relationships, both science education and the closely related academic research establishments, must be encouraged between scientists at minority institutions and scientists at majority institutions.

   - Pre-engineering programs if properly structured and monitored can increase substantially the quality and quantity of minority students pursuing engineering degrees.

HELEN BROWN, Director
Bureau of Curriculum, Inservice and Staff Development
Louisiana State Department of Education
Baton Rouge, Louisiana

PRESENTER, EDUCATION PERSPECTIVE, BATON ROUGE CONFERENCE

Science and technology education is a must for all Americans. A tragedy that pervades this reality is that major scientific decisions are being made by individuals who are often ill equipped to make such decisions. Education is a Catch-22 situation. We are asked to educate all the children and at the same time to be surrogate parents, ministers, psychologists, etc. The public's values are reflected in the school system, and the budget allocations prove this. Yet society, the parents included, do not understand the enormity of the task educators now have and do not provide support to teachers and administrators. Parents complain when higher standards are set and also complain when their children graduate as illiterates.

Until our public schools move beyond minimum competencies and address the needs of those pupils who are eager to explore the fields of science and mathematics, education will continue to be the "whipping boy" of all the politicians. Until parents become more accountable by demanding more of their children as well as more of their schools, and support their educators with positive attitudes as well as with salaries comparable with those of other professional employees, the public schools will make little progress.

Mathematics and science have been deemphasized along with other subjects because schools are being called upon to solve other problems. Universities and colleges have dropped their entrance requirements for students because they need more students, then they complain when they receive students that are not prepared in math and science.

One of the tragedies about education is that teachers are given little opportunity to improve themselves--they can't get time off to visit museums or other community resources. Many science teachers even lack the opportunity to set up laboratory experiments before class begins; some don't even have laboratories. Problem solving should be the number one priority in mathematics and science curricula and the leadership role in curriculum development must come from school superintendents, directors of instruction, and principals.

One reason there are teacher shortages in mathematics and science may be because teacher salaries are so low, especially compared to industry salaries. Scientific and technological fields are constantly drawing the best equipped teachers from the teaching ranks. But remember that teachers are affected more by how people view them than they are by the low

salaries. A happy teacher is the key to improving the educational system. We need to support educators with our attitudes as well as with dollars and cents. We can write all the reports we want to, but until the local level--parents, businesses, and industry--become concerned, nothing much will happen.

RECOMMENDATIONS

- Teacher-training institutions must do a better job of screening potential teachers.
- Teacher education curricula need to be analyzed in terms of required subject matter for major areas of teaching responsibility, i.e., more science courses and more mathematics courses.
- Mathematics and science courses must be made more interesting and more attractive.
- More quality science and mathematics courses should be required of all high school students.
- Special curricular training should be required of those teachers who work with middle and junior high school students. In many states, teachers are certified K-8; this means that during the crucial years when a student should be exploring different courses, he usually doesn't have a teacher well-grounded in either mathematics or science.
- Science teachers should have well-equipped laboratories as well as sufficient time to "set up" for their experiments.
- Provisions should be made for institutes similar to those offered during the sixties.
- Local resources should be better utilized.
- Students should be made more aware of career opportunities in mathematics and science.
- High school graduation requirements in the areas of mathematics and science should be increased.
- Teachers should be treated with more respect by the public.
- Mathematics programs must take greater advantage of calculators and computers.

- Problem-solving processes must be the primary focus in both mathematics and science instruction.

- Opportunities must be provided for continuous inservicing of science and mathematics teachers; the state of Louisiana has a unique tuition-exemption program for all teachers to continue their education at the expense of the state.

- Teacher certification standards must be strengthened. Classrooms must be staffed by competent teachers of science and mathematics.

- Improved materials of instruction as well as proper equipment must be available in every classroom, and teachers must know how to use materials and equipment effectively.

CONFERENCE EVALUATIONS

EVALUATION SUMMARY
Austin, Texas
Based on Feedback from Participant Evaluation Forms

The overwhelming number of participants represented education, either at the SEA, IHE, or LEA levels. There was one industry representative present. The three most valuable parts of the conference, in order of preference, were the presentation by the representative of industry, the presentations by both the representative of education and the representative of science, mathematics and engineering, and the afternoon small group session A. The least valuable parts of the conference, in order, were the presentation on the White House Report, the afternoon panel discussion, and the presentation by the representative of education.

Participants overwhelmingly rated the conference positively. When asked what changes they would make, a few indicated that more structure during the discussions and spending less time discussing the problems would have increased the value of the conference. Participants indicated they would share the results of the conference with a wide range of people and organizations. Most wanted to receive a conference report, and some indicated a need for curricular materials. The heterogeneous make-up of the participants was considered an asset.

The presenters agreed that the conference was well planned and in general echoed the participants' sentiment that more time should have been spent attacking the problem and less on elucidating it.

The following presents the participants' responses to the evaluation forms. When appropriate, numbers indicate how many participants responded to the options provided for each question. Note that on the 5 point Likert Scale questions, the number of responses are indicated below each of the points on the continuum.

THE SEDL REGIONAL CONFERENCE
WHITE HOUSE REPORT ON SCIENCE & ENGINEERING
Participant Feedback Instrument
Austin, Texas
N=28

1. I represent:

20	Education
7	Mathematics
4	Science
2	Engineering
1	Industry
4	Other School boards; counseling/testing; minority engineering education; federally funded (DOE).

2. Check as many as apply to you:

1	I teach at the elementary school level
2	I teach at the secondary school level
10	I teach at the college level
9	I train teachers
0	I am employed in private industry/business
8	I have more administrative responsibilities than training responsibilities
13	Other Help school boards develop policies; supervisor, public science education; have administrative responsibilities equal to training responsibilities; develop curriculum; SEA; curriculum writing; train counselors, educators, student personnel, administrators; I spend over 50% of my time as an educational researcher--teacher education; assess needs, identification of programs; SEA; curriculum writer/editor: responsible for community relations in 7 counties, including all Indians in New Mexico.

3. The conference objectives were:

well defined	5	4	3	2	1	vague	no response
	11	11	3	0	0		1

4. The conference objectives were attained:

fully	5	4	3	2	1	not at all	no response
	2	11	13	0	1		1

5. The conference climate promoted freedom of expression:

agree	5	4	3	2	1	disagree
	19	9	0	0	0	

6. The program format facilitated learning:

agree	5	4	3	2	1	disagree	no response
	9	15	2	1	0		1

7. The information provided at the conference increased my awareness:

agree	5	4	3	2	1	disagree
	8	10	6	3	0	

8. The amount of information provided at the conference was:

0 too much 28 sufficient 0 insufficient

9. The information provided at the conference was:

1 too complex 26 appropriate 1 too simple 1 no response

10. The time allowed to cover the material at this conference was:

0 too much 21 sufficient 7 insufficient 2 no response

11. The time allowed to ask questions was:

0 too much 24 sufficient 1 insufficient 3 no response

12. The most valuable parts of the conference were: (Please rank your first three choices.) 1=3; 2=2; 3=1

Ranking	Points	
	13	Presentation regarding the White House Report
1	35	Presentation by the Representative of Industry
2	21	Presentation by the Representative of Education
2	21	Presentation by the Representative of Science/ Mathematics/Engineering
3	19	Afternoon small Group A session
	11	Afternoon small Group B session
	13	Chance to meet other participants
	7	Afternoon panel discussions
	4	Resource Information
	1	Other (please identify) opportunity to discuss issues with representatives of industry, education and science/mathematics/engineering.

Note: Several of the participants checked parts without ranking them.

13. The least valuable parts of the conference were: (Please rank your first three choices.) no response = 4

Ranking	Points	
1	26	Presentation regarding the White House Report
	2	Presentation by the Representative of Industry
3	10	Presentation by the Representative of Education
	8	Presentation by the Representative of Science/ Mathematics/Engineering
	9	Afternoon small Group A session
	2	Afternoon small Group B session
	9	Chance to meet other participants
2	14	Afternoon panel discussions
	9	Resource Information
	4	Other (please identify) All was useful; all parts were necessary; all seemed valuable as attended; all were valuable; statistics on minority involvement.

Note: Several of the participants checked parts without ranking them.

14. If there are additional conferences on this topic, I believe the following changes should be made: (no response: 14)

- Perhaps it would be profitable to make a "somewhat stronger" attempt to direct a part of the discussion time to addressing specific topics suggested.
- The task to be accomplished should be identified early in the meeting.
- Probably none. The meeting needs to be as open for input as this one.
- More participation of secondary educators and counselors.
- Participants should receive the feature document prior to their coming to the conference.
- Involve people from industry.
- Smaller groups for discussion.
- Make White House Report a mere listing, a handout.
- Presentations by the three respresentatives largely focused on minority problems which are only a portion of the problem (mentioned in only four of the 33 recommendations of the Report).

- Tried to cover too much during group A&B: focus more.
- Well done.
- Have one large group to discuss two topics.
- At least a two-day conference with overnight thoughts and reflections--noon to noon, etc.
- OK as is.

15. I plan to share information gained in this conference with: (no response: 5)

- Members of the New Mexico Association of Nonpublic Schools (75 member schools).
- Members, Texas Section of Mathematics Association of America; members, Departments of Mathematics and Computer Science, Sam Houston State University.
- Ted Hayes, Associate Executive Director, TASB.
- Mathematics teachers, local school districts; administrative staff, local school districts.
- Science teachers supervised.
- Kermit Heiman, Superintendent; Becky Seale, President, PEA; local newspaper.
- Dr. R. H. Walker, Dean, College of Natural Sciences and Mathematics, University of H. C. C.
- Members of Texas Association of Supervisors of Mathematics; local administrators/teachers, Corpus Christi ISD.
- New Mexico Congressional staff.
- Fred Young, Ph.D., P.E., Dean, College of Engineering, Lamar University.
- J. D. Lewis, Chairman, Physical and Biological Sciences, St. Edward's University.
- Crawford Johnson, Program Director, Mathematics, Fort Worth ISD; Dr. Frank Robinson, Director Staff Development, Fort Worth ISD.
- Lubbock chapter of TAME; Dr. J. R. Bradfield, Dean College of Engineering, Texas Tech.

- Sister Loretta Raphael, Superintendent, Diocese of Austin; principals of Diocese of Austin.
- Science Section, Texas Education Agency.
- Thirty three public, 6 private schools in Region 18 ESC.
- Dr. L. A. Melton, Program Head, University of Texas at Dallas; Dallas-Metro North Phi Delta Kappa.
- O. Bown, Director, R&D Center, University of Texas at Austin; students in doctoral seminars.
- G. F. Paskusz, Director, PROMES; Betty Fullerton, Chair, TCC.
- Aubrey Lewis, Regional Director, Texas ACT;M.D. Mat Matson, Regional Director (Missouri, Oklahoma), ACT.
- School district administrators & teachers in Texas.
- Mathematics Education and Education, The University of Texas at Austin; other groups as opportunity presents itself.
- Elementary and Secondary Education Unit, New Mexico State Department of Education; local district administrators in New Mexico.

16. I would like more information about: (no response: 13)

- Would like to see copies of presentations made by invited speakers and of items referred to. Also, would like copy of summary report presented at the outset.
- Activities of and assistance provided by SEDL.
- Results of other conferences and proposed actions.
- I recommend that the findings be mailed to participants.
- Books and/or materials (math & science) available to non public schools, or just names of texts which are considered excellent.
- I would like to have the conference report.
- Follow-up report.
- Strategies.
- Specific materials to make available to schools.

- Counseling implementations for students and returning adults.
- MATHCO; results from the other conferences held.
- Any conference report.
- The report.
- The fate of NSF at the hands of the OMB and/or what will replace the role NSF has played in Science Education.

17. COMMENTS

- Until some control is restored in the public schools and schools again are places of learning, any chance of improving science and mathematics learning is doubtful. Failure of sound system should serve as a reminder that we shouldn't become dependent upon technology with no development of individual skills.
- I think your conference was well worth the time. Best feature was heterogenous grouping of participants. Would like to see subsequent conferences, after appropriate period, to review progress, regroup, rethink, and react again.
- Very informative conference: I hope TASB will be able to cooperate in disseminating information.
- Hope effort expended will have effect.
- Conference seems to be a practical way to approach the problem. It provides information for action and also group support for action. It is good to have interaction with persons of the varied interests of industry, education, science and mathematics.
- This conference should have been at least 1 1/2 days.
- Some materials which were supposed to be presented were not. For example, the mathematics booklets and the slide presentation from NASA.
- A rather heterogenous group--we touched the "tip of the iceberg" in capitalizing on that.
- Have more interaction--total group knowledge is some hundreds of years experience--collect, organize and use it. Have TV series on life of an engineer/scientist.

- The morning time might have been better spent brainstorming, with the afternoon devoted to planning action strategies. I felt the morning was spent telling me what I had read in the report prior to the conference.

- Very informative; Ms. Jones was well prepared and conference demonstrated SEDL's commitment to education.

- I think the suggestion about contacting Walter Cronkite to address this situation should be seriously considered (and implemented).

- Appreciated opportunity to attend.

- I enjoyed it thoroughly.

- Carry over of the union of science educators, universities and industry at the state level may be a good follow-up. This conference may have catalyzed this.

EVALUATION SUMMARY
Baton Rouge, Louisiana
Based on Feedback from Participant Evaluation Forms

The largest number of participants represented education, either at the SEA, IHE, or LEA levels. One representative of industry was present. The three most valuable parts of the conference, in order of preference, were the presentation by the representative of education, the chance to meet other participants, and the group discussions. The least valuable parts, in order, were the presentation of the White House Report, the presentation by the representative of science, mathematics and engineering, and the presentation by the representative of industry.

Participants overwhelmingly rated the conference positively. When asked what changes they would make, a few indicated that more structure during the discussions and spending less time explaining the problems would have increased the value of the conference. Participants indicated they would share the results of the conference with a wide range of people and institutions. Most asked for a conference report.

The presenters agreed that the conference was well planned and one suggested that a similar conference should be made available to many more people in descision making positions.

The following presents the participants' response to the evaluation forms. When appropriate, numbers indicate how many participants responded to the options provided for each question. Note that on the 5 point Likert Scale questions, the number of responses are indicated below each of the points on the continuum.

THE SEDL REGIONAL CONFERENCE:
WHITE HOUSE REPORT ON SCIENCE & ENGINEERING
Participant Feedback Instrument
Baton Rouge, Louisiana
N=19

1. I represent:

12	Education
5	Mathematics
1	Science
3	Engineering
0	Industry
1	Other (please identify) Self
1	No Response (N/R)

2. Check as many as apply to you:

1	I teach at the elementary school level
2	I teach at the secondary school level
10	I teach at the college level
2	I train teachers
1	I am employed in private industry/business
9	I have more administrative responsibilities than training responsibilities
3	Other Retired; Mathematics supervisor K-12; SEA
1	No Response

3. The conference objectives were:

	5	4	3	2	1	
well defined	13	3	2	0	1	vague

4. The conference objectives were attained:

	5	4	3	2	1	
fully	5	7	7	0	0	not at all

5. The conference climate promoted freedom of expression:

	5	4	3	2	1	
agree	16	3	0	0	0	disagree

6. The program format facilitated learning:

	5	4	3	2	1		
agree	10	3	5	0	0	disagree	other irrelevant

7. The information provided at the conference increased my awareness.

	5	4	3	2	1	
agree	8	7	1	1	2	disagree

8. The amount of information provided at the conference was:

1 too much 18 sufficient 0 insufficient

9. The information provided at the conference was :

1 too complex 18 appropriate 0 too simple other partly inappropriate

10. The time allowed to cover the material at this conference was:

0 too much 16 sufficient 3 insufficient

11. The time allowed to ask questions was:

0 too much 16 sufficient 2 insufficient 1 no response

12. The most valuable parts of the conference were: (Please rank your first three choices.) 1=3; 2=2; 3=1

Ranking	Points	
	6	Presentation regarding the White House Report
	7	Presentation by the Representative of Industry
1	17	Presentation by the Representative of Education
	4	Presentation by the Representative of Science/ Mathematics/Engineering
3	10	Afternoon small Group A session
	9	Afternoon small Group B session
2	11	Chance to meet other participants
	9	Afternoon panel discussions
	1	Resource Information
	1	Other (please identify) General discussion

Note: Several of the participants checked parts without ranking them.

13. The least valuable parts of the conference were: (Please rank your first three choices.) 1=3; 2=2; 3=1

Ranking	Points	
1	12	Presentation regarding the White House Report
3	7	Presentation by the Representative of Industry
	0	Presentation by the Representative of Education
2	10	Presentation by the Representative of Science/ Mathematics/Engineering
	2	Afternoon small Group A session
	0	Afternoon small Group B session
	4	Chance to meet other participants
	1	Afternoon panel discussions
	2	Resource Information
	4	Other (please identify) all were valuable (2): none
	7	No response

Note: Several of the participants checked parts without ranking them.

14. If there are additional conferences on this topic, I believe the following changes should be made: (no response = 10)

- Limit the range of the problem to be dealt with.
- The small group discussion was too free-wheeling and lacked clear direction. I suggest a more structured approach.
- More open-minded people willing to implement unconventional approaches.
- More representatives from areas other than education.
- More structure.
- Fewer speeches and more panel-type or group-type discussions.
- Focus on priorities and on courses of action, not on describing existing system.
- No change.

15. I plan to share information gained in this conference with: (no response = 8)

- English Department and other academic departments at Jackson State University.
- Dr. Leon Howard, Associate Vice President, Academic Affairs.
- Teachers in Orleans Parish schools.
- All local systems, State Department of Education.
- Society of Women Engineers.
- American Institute of Industrial Engineers.
- Science faculty.
- Deans at Xavier University; Members of the Board of LEAP.
- Dr. Peter Soderbergh, Dean, College of Education, LSU; Dr. Marilyn Wedig, Head, Curriculum & Instruction, LSU.
- Dr. Bobby Campbell, Assistant Superintendent, Lincoln Parish School Board; Mr. Norris Alexander, Principal, Lincoln Parish.
- CSSP Panel on Presidential Council.
- U.S. Senator Dale Bumpus; U.S. Senator David Pryor; U.S. Representative Bill Alexander; Arkansas Council of Teachers of Mathematics.

16. I would like to receive more information about: (no response = 13)

- Women and minorities in science education.
- Overall conference.
- Feedback from this report.
- Resource information.
- I got sufficient information.
- Results of similar conferences and reports relating to this subject.
- A copy of the formal report if possible.

17. COMMENTS: (no response = 11)

- This was a good way to leave the confines of the ivory tower and find out the concerns of other sectors.
- Some good suggestions made but they were about the educational system and not how to bring about changes.
- I appreciate being asked to attend this conference. I feel that I have been re-dedicated to stress science within my classroom and support these views in my school system. Meetings such as this make me very proud of my profession.
- The talks were minimally relevant to the charges as I understood them.
- Well run conference with an excellent selection of participants.
- SEDL is to be commended for bringing attention to this vital question. Some additional notice of the conference and results should be made to media, school systems, etc.
- I enjoyed the conference.
- Inspiring.

SEDL RECOMMENDATIONS

SEDL RECOMMENDATIONS

The staff of the Southwest Educational Development Laboratory who planned and conducted the two SEDL Regional Conferences on science and engineering education have concluded that the primary problems to be addressed are the lack of information among the general public about the state of student achievement; the need to involve women and minorities in science, mathematics, and engineering; and the relationships of these subjects to individuals' everyday lives. Achieving even a minimal state of awareness of a problem is the first step in any change process. It is imperative, then, that the general public become aware of the issues in the White House Report before lasting change can occur. Educating the general public of an entire country is, of course, a mammoth undertaking. We recommend the following:

- That the President of the United States commit himself publicly, repeatedly, to an idea: that "scientific illiteracy" must be cured. The influence which the President wields is considerable, and costs little to implement.

- That President Reagan bring together representatives of state boards of education, state legislatures, industry, education, engineering, mathematics, and science to discuss the issues listed in the report and to generate solutions, such as industry/education cooperatives.

- That NSF and the Department of Education create curriculum guides for all levels stressing creative ways of teaching mathematics and science. For example: a course in the history of science could include laboratory work which would allow participants to recreate significant experiments from the past. Such a course is now available at Barnard College, New York, and allows women the opportunity to meet science with a spirit of inquiry, without the dread which so often accompanies theoretical or formulaic approaches. Its interdisciplinary nature also affords students the benefits of wider perspectives.

- That the spread of information about career choices for students with undergraduate degrees or technical degrees be encouraged. Emphasizing the need for graduate work may well discourage those students otherwise interested and talented in pursuing a scientific or mathematical career.

- That the spread of information about the importance of computer literacy to individuals' lives be encouraged. As computer technology becomes increasingly important, computer literacy will increasingly become the currency which divides the knowledge-poor and the knowledge-rich.

- That a nationally recognized person be encouraged to volunteer as a spokesperson for the advancement of science. Carl Sagan would be a natural. Walter Cronkite was recommended by a conference participant.

- That television and radio spots be produced which quickly explain salient points from the White House Report and relate them to individuals' lives. Something as simple as a "Did you know?" approach could speak to the fundamentals of biology or physics without being technical (i.e., how gravity works, how clouds form, what a cell is, and so on). Anything which gets people to say "I didn't know that" is a learning device.

- That the idea be encouraged that science is as much a "basic," with daily implications in everyones' lives, as are mathematics, reading, writing, and human interaction.

- That a nation-wide corps of volunteers be developed with expertise in these areas. For example, members of industries and businesses could be appointed to conduct in-house staff seminars on a variety of subjects, such as the relationship of technology to everyday life, or the scientific benefits which have accrued from the space program. These seminars might then be offered to community members in neighborhoods surrounding the industry, and the spokesperson could be provided on loan to neighboring schools.

- That the White House Report be translated into several shorter forms, with non-technical language which relates its findings to individuals' lives. Produce brief pamphlets, broadsides, or self-mailers which can be provided to schools, community groups, individuals, and businesses free upon request.

- That NSF sponsor summer training institutes for all levels of teachers wishing to change fields or upgrade their skills in science and related areas. NSF employees could travel to sites across the United States to teach summer institutes or occasional inservice sessions in public schools, community colleges, and universities.

ATTACHMENTS

THE SEDL REGIONAL CONFERENCE: WHITE HOUSE REPORT ON SCIENCE & ENGINEERING

March 10, 1981
Fifth Floor Conference Room
SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY
211 East 7th Street
Austin, Texas 78701
(512) 476-6861

8:00 a.m. - 8:30 a.m.	COFFEE & REGISTRATION
8:30 a.m. - 8:45 a.m.	WELCOME & INTRODUCTIONS Dr. James H. Perry, Executive Director, SEDL Dr. Preston C. Kronkosky, Deputy Executive Director, SEDL
8:45 a.m. - 9:25 a.m.	THE WHITE HOUSE REPORT: "SCIENCE & ENGINEERING EDUCATION FOR THE 1980'S & BEYOND" Dr. John M. Mays National Institute of Education Washington, D.C.
9:25 a.m. - 10:05 a.m.	A REPRESENTATIVE OF INDUSTRY SPEAKS Mr. Jerry Elliott NASA Johnson Space Center Houston, Texas
10:05 a.m. - 10:20 a.m.	BREAK
10:20 a.m. - 11:00 a.m.	A REPRESENTATIVE OF EDUCATION SPEAKS Dr. Carole Hardeman Southwest Center for Human Relations Studies University of Oklahoma Norman, Oklahoma
11:00 a.m. - 11:40 a.m.	A REPRESENTATIVE OF SCIENCE/MATHEMATICS/ENGINEERING SPEAKS Dr. Mary Atwater Southwest Resource Center for Science & Engineering New Mexico State University Las Cruces, New Mexico
11:40 a.m. - 1:00 p.m.	LUNCH ON YOUR OWN (See packet for ideas.)
1:00 p.m. - 3:00 p.m.	PARTICIPANTS DIVIDE INTO GROUPS "A" & "B"
3:00 p.m. - 3:15 p.m.	BREAK
3:15 p.m. - 3:35 p.m.	GROUPS "A" & "B" REPORT
3:35 p.m. - 4:00 p.m.	PANEL OF PRESENTERS: GENERAL DISCUSSION
4:00 p.m. - 4:30 p.m.	EVALUATION & CONCLUSION

Baton Rouge

THE SEDL REGIONAL CONFERENCE: WHITE HOUSE REPORT ON SCIENCE & ENGINEERING

March 12, 1981
NAPOLEON ROOM
PRINCE MURAT MOTOR INN
1480 Nicholson Drive
Baton Rouge, Louisiana 70802
504/387-1111

8:00 a.m. - 8:30 a.m.	COFFEE & REGISTRATION
8:30 a.m. - 8:45 a.m.	WELCOME & INTRODUCTIONS Dr. James H. Perry, Executive Director, SEDL Dr. Preston C. Kronkosky, Deputy Executive Director, SEDL
8:45 a.m. - 9:25 a.m.	THE WHITE HOUSE REPORT: "SCIENCE & ENGINEERING EDUCATION FOR THE 1980'S & BEYOND" Dr. John M. Mays National Institute of Education Washington, DC
9:25 a.m. - 10:05 a.m.	A REPRESENTATIVE OF INDUSTRY SPEAKS Mr. Robert A. Rand ALCOA, Chief Industrial Engineer Bauxite, Arkansas
10:05 a.m. - 10:20 a.m.	BREAK
10:20 a.m. - 11:00 a.m.	A REPRESENTATIVE OF EDUCATION SPEAKS Dr. Helen Brown Director, Curriculum Inservice and Staff Development Louisiana State Department of Education
11:00 a.m. - 11:40 a.m.	A REPRESENTATIVE OF SCIENCE/MATHEMATICS/ENGINEERING SPEAKS Dr. James Perkins Chairperson, Division of Natural Sciences Jackson State University Jackson, Mississippi
11:40 a.m. - 1:00 p.m.	LUNCH (on your own)
1:00 p.m. - 3:00 p.m.	PARTICIPANTS DIVIDE INTO GROUPS "A" & "B"
3:00 p.m. - 3:15 p.m.	BREAK
3:15 p.m. - 3:35 p.m.	GROUPS "A" & "B" REPORT
3:35 p.m. - 4:00 p.m.	PANEL OF PRESENTERS: GENERAL DISCUSSION
4:00 p.m. - 4:30 p.m.	EVALUATION & CONCLUSION

THE SEDL REGIONAL CONFERENCE: WHITE HOUSE REPORT ON SCIENCE & ENGINEERING

Purposes

1. To study reports of the decline in mathematics and science academic performance among elementary and secondary students.

2. To examine the lack of participation of women, Blacks, Hispanics, American Indians, handicapped, and others historically underrepresented in these academic areas.

3. To propose strategies to improve this situation and to influence local, state, and national policy makers.

Objectives

1. To provide participants with information on and an opportunity to discuss the White House Report, SCIENCE & ENGINEERING EDUCATION FOR THE 1980's & BEYOND.

2. To develop proposed strategies for disseminating the information in the White House Report to a wider audience, including educators, industry representatives, and national, federal, state and local officials.

3. To explore and propose possible solutions for addressing the decline of mathematics and science academic performance at the elementary and secondary levels.

Outcomes

1. Participants will meet and share concerns and ideas regarding the implications of the White House Report.

2. Based on participant input, SEDL will develop a document which will contain:
   a. Proposed strategies for disseminating information contained in the White House Report to a wider audience; and
   b. Suggested solutions for addressing the decline of mathematics and science academic performance.

THE PRESENTERS

MARY ANN MONROE ATWATER
Associate Director, South-West Resource Center for Science and Engineering and Assistant Professor, Department of Curriculum & Instruction
New Mexico State University
Las Cruces, New Mexico

Ph.D. from North Carolina State University, Raleigh, in Science Education. M.A. from the University of North Carolina in Organic Chemistry. While pursuing advanced degrees conducted a one-year and five-year study of graduates of North Carolina State University for the Dean's Office and assisted in undergraduate courses for prospective science teachers at secondary school levels. Previously served as Natural Science Coordinator at Fayetteville University, coordinating undergraduate science instruction in natural science, advising students and teaching. Her honors include a Danforth Fellowship, membership in Phi Kappa Phi National Honor Society and she is a member of various professional organizations and has published both in pure science and in education fields.

JERRY ELLIOTT
Project Engineer, Technical Manager
Space Shuttle Program Ofc.
NASA Johnson Space Center
Houston, Texas

B.S. in Physics from the University of Oklahoma. Special honors and awards received the Bausch & Lomb National Science Award; Presidential Medal of Freedom for duties as Retrofire Officer at Mission Control Center during aborted Apollo 13 mission; Science & Engineering National Achievement Award, presented by American Indian Art & Cultural Exchange; Special Achievement Award from the National Aeronautics and Space Administration Lewis Research Center; listed in American Men & Women of Science. He is a member of the American Indian Engineering Council of the National Academy of Engineering and a founder and member of the Board of Directors of the American Indian Science & Engineering Society, Inc. Has published papers and made numerous presentations on the subject of Indian awareness and uses of technology. Elliott is Osage/Cherokee.

JOHN M. MAYS
Science Advisor
National Institute of Education
U. S. Department of Education
Washington, D.C.

Ph.D. in Chemical Physics from Columbia University in New York. Mays was a member of the staff of the Science Advisor to the President, where he helped to establish the National Institute of Education, which he joined in 1972. Prior to that he was a Program Director in the Course Content Improvement Section of the National Science Foundation. After two years as a postdoctoral fellow at Harvard, was a member of the chemistry and physics research departments at Bell Telephone Labs.

CAROLE HARDEMAN
Project Director
Southwest Center for
Human Relations Studies
University of Oklahoma
Norman, Oklahoma

Ph.D. from the University of Oklahoma in Secondary Education, with a minor in Human Relations. Directs SOUNDS OF SCIENCE, a multicultural/multidisciplinary Science Curriculum Project at the University of Oklahoma. Hardeman has conducted various staff development training activities such as Mathematics and Sex Equity, Teaching Styles-Learning Styles, and Integrating Multicultural, Nonsexist Career Components Into Mathematics and Science Curriculum. She has made numerous presentations at state and national meetings and has served as a consultant to various agencies and organizations in Oklahoma. Currently she is listed in Who's Who in American Colleges and Universities and is active in professional organizations related to her interest and work.

THE PRESENTERS

HELEN BROWN
Director, Bureau of Curriculum, Inservice and Staff Development
Louisiana State Department of Education
Baton Rouge, Louisiana

Ed.D. from Louisiana State University in Supervision and Administration with postdoctoral work at Southern University, Baton Rouge in Humanities and a graduate of John Hay Fellows Humanities Institute, Williams College. Past work experience includes various teaching, counseling, and supervision positions with East Baton Rouge Parish. She co-authored two textbooks and has published numerous articles and curriculum guides. She has served as an officer for various education and civic groups, including being First President and Charter Member of the Baton Rouge Mayor-President's Commission on the Needs of Women. In 1981, Brown was one of three selected by the State Superintendent to represent the Louisiana Department of Education in France as guest to the French Ministry of Education.

JAMES PERKINS
Chair, Division of Natural Sciences and Head of the Chemistry Department
Jackson State University
Jackson, Mississippi

Ph.D. in Chemistry from the University of Pittsburgh. Currently serves as an Advisory Board member for the American Chemical Society Petroleum Research Fund. Has been a member of numerous committees and councils for the involvement of minorities in Mathematics, Science and Engineering, Has been Project Director for various grant projects funded by the National Science Foundation, National Aeronautics Space Administration, National Institutes of Health, Research, and others. Perkins has been a classroom teacher and worked with Project Upward Bound. Currently he is active in several professional organizations and is widely published.

ROBERT A. RAND
Chief Industrial Engineer
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A graduate of Texas A&M University and a 24-year employee of ALCOA. Has served in various industrial engineering and management posts at ALOCA plants located in Point Comfort, Texas, Vancouver, Washington, Lafayette, Indiana and Pittsburgh, Pennsylvania. Has been Chief Industrial Engineer at the Arkansas plant since 1977. In addition to being Saline County Chairman of the Arkansas State Council on Economic Education, Rand serves on the Dean of Business Administration, Advisory Committee at the University of Arkansas in Fayetteville and is a Director of the Arkansas Opera Theatre.

JOHN M. MAYS
Science Advisor
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Ph.D. in Chemical Physics from Columbia University in New York. Mays was a member of the staff of the Science Advisor to the President, where he helped to establish the National Institute of Education, which he joined in 1972. Prior to that he was a Program Director in the Course Content Improvement Section of the National Science Foundation. After two years as a postdoctoral fellow at Harvard, was a member of the chemistry and physics research departments at Bell Telephone Labs.

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Totals	336	119	82	47

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